FACILITATOR 'S GUIDE

ON DETECTION AND CONTROL OF

EPIDEMIC YELLOW FEVER

CONTENTS

ANNEX

FACILITATOR'S GUIDE

WORKSHOP ON DETECTION AND CONTROL OF EPIDEMIC YELLOW FEVER

Why Is This Course Needed?

Epidemic yellow fever continues to be a problem in many areas of Africa. As long as there is a large population that is not immune, the potential for an epidemic of yellow fever exists. The public health response to an epidemic of yellow fever is rapid mass vaccination, but in order to prevent the most cases and save lives, mass vaccination must begin as soon as possible after an epidemic has been recognized and must target the persons who most at risk of disease.

This course is designed to prepare district health personnel to detect epidemics of yellow fever early and to control epidemics effectively.

District health personnel who attend the workshop and who carry out a series of self-study projects will:

- √ learn about the epidemiology of yellow fever
- √ learn how to detect epidemics of yellow fever
- √ learn how to control epidemics of yellow fever
- √ do projects to prepare the district for a yellow fever epidemic
- √ evaluate their district's readiness to respond to an epidemic
- √ make an emergency response plan

Who Should Be The Participants In The Workshop?

The workshop is designed for district level public health personnel (such as District Health Officers) who have public health responsibility for a population of approximately 250,000 persons. These personnel are in the "front-line" in terms of detecting epidemics of yellow fever. In addition, they often are the most peripheral level at which an effective response can be mounted.

Workshop participants should, in turn, train health workers in their own districts.

Who Should Be The Facilitators For The Workshop?

Workshop facilitators should be public health or clinical experts who have had experience in responding to epidemics of yellow fever and who have experience in teaching. The participants in the workshop are district level personnel, so facilitators will usually be from the provincial, regional, or national level. If facilitators and participants are from the same state or region, it will be easier for the facilitators to provide follow-up consultation and supervision. A Course Director will be in charge of most of the administrative arrangements and of overall planning for the workshop.

How Should the Facilitators be Trained?

All potential facilitators should attend the workshop themselves. They should work on the Self-Study Projects or thoroughly discuss them. Then, using the *Facilitator's Guide*, they should practice conducting the entire course — several times, if possible.

Preparation Checklist For The Workshop

Use this checklist to prepare for a workshop. The course director should assign specific responsibilities and be sure that each activity is done on time. There are blank rows at the end for adding more activities.

What to Do	When	Person Responsible	Date Completed
Schedule workshop	____ months before		
Arrange funding for workshop	____ months before		
Arrange accommodations for staff and participants	____ months before		
Select and invite participants	____ months before		
Arrange transportation and other reimbursement	____ weeks before		
Arrange meals, tea/coffee	____ weeks before		
Select and meet with training staff (facilitators, guest lecturers, technical experts)	____ weeks before		
Prepare workshop schedule and assign facilitator responsibilities	____ weeks before		
Make all preparations listed for each lesson	____ weeks before		
Arrange for workshop venue	____ weeks before		
Invite sponsors for opening ceremony	____ weeks before		
Practice conducting workshop with facilitators	____ weeks before		
Obtain materials for participants (course materials and paper, pens, folders, name tags, flipchart paper)	____ weeks before		
Obtain materials needed by facilitators (course materials and paper, pens, chalk, overhead projector and screen/sheet)	____ weeks before		

What to Do	When	Person Responsible	Date Completed

Preparations And Materials Needed Before The Workshop

Materials

For the entire workshop:

- Overhead projector, additional blank transparency sheets, and pens
- Flipchart and markers, tape and/or stand to hold paper
- Chalkboard and chalk
- Pens, pencils, pencil sharpener, paper, erasers, ruler
- Calculators (optional)
- 1 Copy of the *Guidelines* for each participant
- 1 Copy of the *Exercise Book* for each participant. The *Exercise Book* contains exercises that will be done during the workshop and eleven Self-Study Projects, which are to be done after the workshop
- 1 Copy of the *Guidelines,* the *Exercise Book* and the *Facilitator's Guide* for each facilitator
- 1 Set of overhead transparencies for the workshop

Preparations For Each Session

Session I

- Make one copy of the pre-test for each participant (see Annex).
- Make one copy of the workshop schedule for each participant.
- Assemble one set of workshop materials for each participant.

Session II

— Get information on yellow fever epidemics in the country and on historic areas of transmission. If possible prepare overhead transparencies with information about yellow fever in the country.

— Practice the lecture on *Epidemiology*. Put transparencies in order.

Session III

— Practice the lecture *How to Detect and Confirm an Epidemic of Yellow Fever*. Put the transparencies in order.

— Obtain the name and address of the person(s) who should be notified of a suspected epidemic; try to find several ways of contacting them.

— If there are other people (e.g., counterparts across the border, police, and customs agents, etc.) who should be notified, get names and contact addresses for them also.

— Obtain the form that is used for "Immediate Notification" of diseases, and make one copy for each participant (if not available, participants may use the sample form in *their Exercise Book*).

Session IV

— Assemble materials.

— Practice the lectures and put the transparencies in order.

— Review calculations for the exercises.

— In Exercise 3, if participants will use the populations of their own districts for calculating the age-specific attack rates, do the calculations before the lesson.

— Determine the responsibility of district personnel in arranging for laboratory confirmation (i.e., will district personnel themselves obtain and transport specimens, or will personnel from a reference laboratory do it?).

— Obtain current information on which laboratories have the capacity to identify yellow fever and fill in blanks in Learning Activity #8.

Session V

— Practice the lectures *Response to an Epidemic of Yellow Fever* and *Clinical Management of Yellow Fever*. Put the transparencies in order.

— Review the information on clinical presentation and management of yellow fever in Sections 2.1, 2.2, 2.3, and 4.9 of the *Guidelines*. If necessary, adapt the suggested answers to Learning Activity 4, so that they correspond to the level of equipment and training of the participants and those whom they supervise.

— Re-read the article on Yellow Fever (in the Annex to the *Exercise Book*) and make notes to prepare for the discussion in Learning Activity 4.

— Review the national experience in yellow fever control, and make notes to prepare for the discussion in Learning Activity 5.

Session VI

— Get examples of local or national public education materials on yellow fever.

— As part of the workshop invitation, ask participant to bring any examples of yellow fever health education materials with them.

Session VII

— Practice the lecture *Being Prepared for an Epidemic.* Put the transparencies in order.

— Find out if there are national or local guidelines which assign specific responsibilities for yellow fever detection and control for district and health facility level health workers. If there are, compare them to those suggested in Annex 5 of the *Technical Guidelines on the Detection and Control of Epidemic Yellow Fever.* If they differ significantly, prepare a handout of those that apply to the participants and to health workers whom they supervise.

Session VIII

— Decide on follow-up activities (e.g., future meetings of participants to discuss/work on Self-Study Projects, or scheduled visits by supervisors or facilitators to participants as follow-up).

— Review Self-Study Projects.

— Prepare schedule for completion of Self-Study projects.

— Make one copy of the post-test (identical to pre-test) for each participant.

How To Use This Facilitator's Guide

This *Facilitator's Guide* provides a guide to a two-day workshop on the detection and control of yellow fever. There are suggestions for the preparation of the workshop and detailed lesson plans. You, the facilitator, may want to modify some of the lesson plans based on local experience or policy. You may also make modifications based on the knowledge and skills the participants already have.

Each lesson plan specifies:

√ the specific objectives for the lesson

√ the methods to use

√ the materials that are needed

√ any preparation that should be done

√ a step-by-step description of *learning activities*

How to Prepare for the Workshop - Facilitators

The Course Director will assign responsibilities for certain aspects of the course to individual facilitators. Everyone involved in the course should meet at least one week in advance to discuss how the course will be conducted, to practice the lectures and exercises and to be sure that all preparations have been made. All facilitators should:

- √ Attend the workshop themselves.

- √ Read the *Technical Guidelines on the Detection and Control of Epidemic Yellow Fever*. Try to read them several times — the more familiar facilitators are with the *Guidelines*, the better the workshop will be.

- √ Read through this *Facilitator's Guide* and the *Exercise Book*. This will give a good idea of how the workshop should be conducted and the responsibilities of a facilitator.

- √ Do all the exercises with the other facilitators.

- √ Practice all the lectures they will be responsible for several times.

  For each lecture there is a set of prepared overhead transparencies. All the transparencies for each lecture are included in *this Facilitator's Guide*, as part of the lesson in which they will be used. In the *Facilitator's Guide*, each transparency is printed in reduced size, and there is room for facilitators to write additional commentary. For most of the transparencies, it is enough to read the words printed on the transparency (making some short phrases into complete sentences). For some transparencies, there is suggested commentary. Each transparency is labeled with "YF" for Yellow Fever, the name of the lecture, and then the number of the transparency, e.g., *YF / Detect & Confirm / 2.*

- √ As you practice the lectures and do the exercises, try to anticipate what questions the participants might ask you. In most cases, the answers will be in the *Guidelines*, but if not, ask the Course Director or another technical expert.

- √ Pay special attention to the "Preparation" section for each session in the *Facilitator's Guide*. Be sure than you have

prepared everything needed well before the workshop. There is a list of preparations to refer to on page 6.

√ If there is extra time in the workshop, do some of the "Self-Study Projects" during the workshop.

SAMPLE SCHEDULE FOR WORKSHOP

ON THE

DETECTION AND CONTROL OF EPIDEMIC YELLOW FEVER

LOCATION

DATES - FROM MONTH & DAY TO MONTH & DAY

Day 1: Date

Time	Session
8:00 - 9:00	Opening Ceremony
9:00 - 10:00	Session I Introduction
10:00 - 10:30	Session II Yellow fever - Epidemiology
10:30 - 10:45	*Tea / Coffee*
10:45 - 11:45	Session III Detection and Confirmation of an Epidemic of Yellow Fever
11:45 - 12:30	Session IV Field Investigation
12:30 - 2:30	*Lunch*
2:20 - 3:45	Session IV (continued) Field Investigation - Analysis and Use of Results
3:45 - 4:00	*Tea / Coffee*
4:00 - 5:30	Session V Responding to a Suspected or Confirmed Yellow Fever Epidemic

Day 2 Date

Time	Session
8:00 - 9:30	Session V (continued)
9:30 - 10:00	Session VI Health Education
10:00 - 10:30	Session VII Being Prepared for an Epidemic of Yellow Fever
10:30 - 10:45	*Tea / Coffee*
10:45 - 11:45	Session VII (continued)
11:45 - 12:30	Session VIII Planning for Follow-Up and Self-Study Projects
12:30 - 2:30	*Lunch*
2:20 - 3:45	Session VIII (continued) Planning for Follow-Up and Self-Study Projects
3:45 - 4:00	*Tea / Coffee*
4:00 - 5:30	Session VIII (continued) Planning for Follow-Up and Self-Study Projects (continued) Closing

SESSION I

INTRODUCTION

OBJECTIVES: Explain the goals and objectives of the workshop.

Administer pre-test

METHODS: Presentation, written test

MATERIALS: Course materials and pre-test for each participant

PREPARATION:

___ Assemble workshop materials

____ Make one copy of the pre-test for each participant

____ Make one copy of the schedule for each participant

LEARNING ACTIVITIES 1 hour

1. Introduction - Workshop Objectives

a) Explain the goal and the objectives of the workshop. Make these points:

- √ the goal of the workshop is save lives by preparing you to detect and respond to yellow fever epidemics
- √ yellow fever is a preventable disease, and the best way to eliminate it is to vaccinate all children with yellow fever vaccine
- √ in the meantime, the best way to save lives is to detect epidemics *early* and to respond *quickly*
- √ the only effective control measures are mass vaccination and reduction of the mosquitoes that transmit the disease

- √ being prepared is the key to the prompt detection and control of yellow fever

b) Tell participants that, during this workshop and the follow-up projects, they will:

- √ review the epidemiology of yellow fever
- √ learn how to detect outbreaks of yellow fever
- √ learn how to control an outbreak of yellow fever, and which control measures are effective, and which are not
- √ consider how to prepare their own district for a possible yellow fever epidemic
- √ evaluate whether their area is able to detect and control epidemics of yellow fever
- √ make an emergency response plan

c) Remind participants that some of them may have experience in detecting and responding to epidemics of yellow fever, or of other diseases. Sharing their experiences with the other participants will be an important part of learning in this course.

2. Schedule and Administrative Arrangements

a) Distribute the schedule for the workshop.

b) Briefly explain any special administrative arrangements (lengthy discussion and any individual problems should be dealt with later, not during classroom time).

c) Explain that after this two-day workshop, they will return to their places of work and undertake a series of practical projects. These projects will allow them to put into action the knowledge and skills learned at the workshop, and will help their districts prepare for a

possible outbreak of yellow fever. The projects should be completed in the 3-12 months after the workshop.

3. Pre-Test

Administer the pre-test, if it has not been given yet. Tell participants that:

- √ you will use the results to improve this and future workshops
- √ they can use the results to see how much they learned during the workshop
- √ they will take the test again after the workshop

4. Course Materials

a) Distribute the course materials — each participant should receive a copy of the *Guidelines* and of the *Exercise Book*.

b) Briefly, orient participants to the sections of the *Guidelines on the Detection and Control of Epidemic Yellow Fever.*

- √ the first chapter describes the basic epidemiology of yellow fever
- √ the second chapter describes clinical yellow fever
- √ the third chapter explains how to detect and confirm an epidemic of yellow fever
- √ the fourth chapter describes how to respond to an epidemic
- √ the fifth chapter describes how to be certain a district is prepared for a possible epidemic

c) Tell participants that they will not have to take notes during lectures, because all the information in the lectures is already included in the *Technical Guidelines on the Detection and Control of Epidemic Yellow Fever.*

d) Briefly, orient them to the three sections of the *Exercise Book*:

   i) Workshop Exercises — will be done during the two day workshop.

   ii) Self-Study Projects — will be done after the workshop.

   iii) Annexes — contain supplementary material.

e) Ask participants to read the article at the back of the *Exercise Book* by the next day, or sooner if they have free time. This article, and their own experiences, will be the basis for group discussions during the workshop. As they read, they should compare the experiences related in this article with conditions in their own country.

SESSION II

YELLOW FEVER: THE DISEASE AND EPIDEMIOLOGY

OBJECTIVES : At the end of the lesson, participants will be able to:

- √ explain basic epidemiology of yellow fever
- √ optional — give history of yellow fever epidemics in the country
- √ optional — name historic areas of transmission in the country

METHODS: Presentation

MATERIALS: *Guidelines on the Detection and Control of Epidemic Yellow Fever*, prepared overhead projector transparencies

PREPARATION:

___ Get information on yellow fever epidemics in the country, and on historic areas of transmission, if doing optional exercises. If possible, prepare overhead transparencies with information about yellow fever in the country

____ Practice lecture and put transparencies in order

LEARNING ACTIVITIES 30 minutes

1. Introduction

Explain the topic and the objectives for the lesson.. Explain that the information given in this lesson is also found in Chapters 1 and 2 of the *Guidelines on the Detection and Control of Epidemic Yellow Fever.*

2. Lecture: Yellow Fever Epidemiology

Give a lecture on the public health importance of yellow fever and on the epidemiology of yellow fever. Use the prepared overhead projector transparencies *(and any others you have made about the yellow fever situation in your country).* Reduced versions of the transparencies are on the following pages — there is room for you to write additional notes or information you want to include in the lecture.

If you have information about past yellow fever epidemics in your country, and about the zones where yellow fever has occurred in the past, include that in the lecture.

Answer any questions (however, if the answer to a question will be given in a later session, say so, and ask the participant to wait).

3. Summary

After the lecture, ask a participant to summarize the key points, or briefly summarize them yourself.

Detection and Control of Epidemic Yellow Fever

Epidemiology

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Yellow Fever in Africa

- 1st documented in 1778
- Tens of thousands of deaths
  Hundreds of thousands of cases
- Epidemics were eliminated by vaccination in Francophone Africa for a time
- Many countries at risk
- Cannot predict where next epidemic will be

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Yellow Fever

- **Acute viral infection**
- **Transmitted by mosquitoes**
- **Endemic and epidemic in Africa**
- **Case fatality rate is high in classic yellow fever**
- **No curative medical treatment**
- **Preventable by vaccination**

Epidemics of Yellow Fever

- **High death rates**
- **Great social and economic disruption**
- **Controlled by**
  - mass vaccination
  - elimination of mosquito vector
- **Occur periodically**
  - about every 10 years
  - when a non-immune population is built up

Yellow Fever

- **Endemic Yellow Fever**
  - **sporadic cases**
  - **exposure to sylvatic yellow fever, or**
  - **after an epidemic**
- **Epidemic Yellow Fever**
  - **sudden onset of many clinically compatible cases**

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Sylvatic Yellow Fever

Forest monkey - mosquito cycle

- **Transmitted by treehole breeding mosquitoes**
- **Cases are sporadic**
- **Humans who work in or visit forest**

Urban Yellow Fever

***Aedes aegypti* - *transmitted* yellow fever**

- **Transmitted by *Aedes aegypti* mosquitoes**
- **Occurs in villages and towns**
- **Cycle = "mosquito to human to mosquito to human...."**

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Environmental Factors

- **Heavy rainfall - many mosquitoes**
- **Dry areas - store water close to home**
- **Mosquito breeding sites**
  - water storage containers
  - tires
  - refuse
  - natural = tree holes, foot prints, in plants
- **Monkeys**

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Mosquito Vector Factors

- **Not all mosquitoes transmit YF**
- ***Ae. aegypti* is usually primary vector in epidemics**
  - avid human biter
  - lives close to people
  - should know distribution
- **Forest mosquitoes bite humans who enter the forest**
- **Consult specialists for vector control measures**

Host Factors

- **Immune status most important factor**
- **People become immune through**
  - vaccination
  - natural infection
- **Large population of non-immunes = risk of epidemic**
- **Behaviors**
  - visit or work in or near forest (men)
  - at home, near peri-domestic *Ae. aegypti* (women, children)

Areas at Risk of Yellow Fever

- **Areas where there were YF epidemics in the past**
- **People work / visit in forest where sylvatic YF occurs**
- **People come from areas of YF transmission**
- **These factors are present:**
  - mosquitoes that transmit YF
  - a long rainy season
  - forested areas with monkeys

Public Health Program
for Yellow Fever

1. **Prevention Program**
   - based on vaccinating susceptibles
   - add YF vaccine to EPI program

2. **Plan for Responding to Epidemics**
   - early detection of epidemics
   - prompt mass vaccination of high risk groups
   - mosquito control measures
   - provision of funding and resources

Clinical Yellow Fever

- **No protracted carrier stage**
- **No direct person to person contact**
- **3-6 day incubation period**
- **Patient is viremic 3-6 days after onset of fever**
- **Wide clinical spectrum of disease**
- **Easily confused with other causes of fever**

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Spectrum of Clinical Illness

- **Undifferentiated febrile illness**
  - resembles many other fevers

- **Classic Yellow Fever**
  - fever, vomiting, epigastric pain
  - prostration, dehydration
  - scleral icterus
  - renal and hepatic abnormalities
  - hemorrhagic tendency
  GI bleeding - black vomitus

Phases of Clinical Yellow Fever

- **Phase 1 - non specific febrile illness**
  - viremic patient, but diagnosis difficult
- **Period of Remission**
  - brief clinical improvement
  - 3rd-4th day after onset
- **Phase 2 - "intoxication"**
  - hepatic and renal dysfunction
  - bleeding
- **50% case fatality rate for severe YF**

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Suggestive Physical Signs

- **Fever is almost always present**
- **Faget's sign - relative bradycardia**
  - slow heart rate in relation to fever
- **Conjunctival congestion**
- **Flushing of face and neck**
- **Tongue reddened at end and margins**
- **Minor gingival hemorrhages**

Diagnosis of Yellow Fever

- **Clinical Diagnosis not easy**
  - **very difficult early in outbreak**
- **Definitive diagnosis requires laboratory**
  - **serology**
  - **virus isolation**
  - **malaria may be identical to early yellow fever**
  - **many causes of undifferentiated fever**
- **Maintain high index of suspicion for**
  - **fevers not responsive to antibiotics or antimalarials**
  - **increased admission and death rates from hepatitis**
  - **reports of many deaths following fevers**

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Purposes of Surveillance

- **Detect epidemics early**
- **Estimate how many cases and deaths**
- **Assess extent of the epidemic**
- **See if an epidemic is spreading, and where**
- **Plan distribution of supplies and staff**
- **Determine effectiveness of control measures**

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Effective Surveillance

- **Essential to recognition of epidemics**
- **Depends on clinical diagnosis of cases**
- **Depends on laboratory confirmation**
- **Requires effective reporting system**

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Surveillance Case Definitions

- **SUSPECTED CASE =**
  Sudden onset of fever, followed by jaundice
  AND one or more:
  - **bleeding in the mouth**
  - **black vomitus**
  - **death**

- **CONFIRMED CASE =**
  Suspected case AND
  - **virus isolation from blood or liver OR**
  - **positive neutralization or IgM capture**

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Surveillance Case Definitions

Report Suspected YF Cases Urgently

- **Report a single suspected case immediately**
- **Report a suspected epidemic immediately**
- **Do not wait for confirmation**
- **Take informal reports seriously**
  - **from travelers and merchants**
  - **from the public**
  - **from news reports**

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How To Report Suspected Yellow Fever

- **Report to the designated level**
- **Use most rapid and reliable means available**
  - **telephone**
  - **radio**
  - **FAX or TELEX**
  - **telegram**
  - **courier (Ministry or informal)**
- **When using informal or unsure means, send a back-up report as well**

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Zero Reporting

- **"Zero reporting" = send a report even if no cases or deaths occurred**
- **Distinguishes between areas**
  - that really had no cases
  - that did not send a report
  - from which the report did not arrive
- **Helps evaluate effectiveness of vaccination campaign**

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